

ABSTRACT OF THE DISCLOSURE

A optical filter has a loss spectrum whose gradient $dL/d\lambda$ of a loss L (dB) with respect to the wavelength λ (nm) is variable in the wavelength band of multiplexed signal light. A control circuit detects each power of signal light components demultiplexed by an optical coupler and controls the power of optical pumping light to be supplied to an optical amplification section from an optical pumping light sources such that the power of output signal light has a predetermined target value. The control circuit also controls the gradient $dL/d\lambda$ of the optical filter on the basis of powers of the signal light components.